SEQUENCE LISTING

<110> Blumenberg, Miroslav
Gazel, Alix M.

<120> Genes and Polynucleotides Associated with Ultraviolet
Radiation-Mediated Skin Damage and Uses Thereof

<130> 71369.172(PFI-024US)

<140> US 09/659,737
<141> 2000-09-11

<150> US 60/155,029
<151> 1999-09-20

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  His Arg Asp Ile Lys Ala Gly Asn Ile Leu Leu Leu Glu Lys Ile Glu
  1   5   10   15

cat gat gac atc tgc aat aaa act ttg aag att aca gat ttt ggg ttg   97
His Asp Asp Ile Cys Asn Lys Thr Leu Lys Ile Thr Asp Phe Gly Leu
        20   25   30

gcg agg gaa tgg cac agg acc acc aaa atg agc aca gca ggc acc tat   145
Ala Arg Glu Trp His Arg Thr Thr Lys Met Ser Thr Ala Gly Thr Tyr
    35   40   45

gcc tgg atg gcc cca gaa g
Ala Trp Met Ala Pro Glu   164
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His Arg Asp Ile Lys Ala Gly Asn Ile Leu Leu Leu Glu Lys Ile Glu
1   5   10   15
His Asp Asp Ile Cys Asn Lys Thr Leu Lys Ile Thr Asp Phe Gly Leu
        20   25   30
Ala Arg Glu Trp His Arg Thr Thr Lys Met Ser Thr Ala Gly Thr Tyr

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            35                    40                        45
    Ala Trp Met Ala Pro Glu
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    a cat cgg gac atc aag agc gac tcg atc ctg ctg acc cat gat ggc agg  49
      His Arg Asp Ile Lys Ser Asp Ser Ile Leu Leu Thr His Asp Gly Arg
      1               5                   10                      15

    gtg aag ctg tca gac ttt ggg ttc tgc gcc cag gtg agc aag gaa gtg     97
    Val Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Val Ser Lys Glu Val
              20                  25                  30

    ccc cga agg aag tcg ctg gtc ggc acg ccc tac tgg atg gcc cca gag    145
    Pro Arg Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu
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    <210> 4
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    <400> 4
    His Arg Asp Ile Lys Ser Asp Ser Ile Leu Leu Thr His Asp Gly Arg
    1               5                   10                      15
    Val Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Val Ser Lys Glu Val
              20                  25                  30
    Pro Arg Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu
          35                  40                  45


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      His Arg Asp Ile Lys Ser Asp Ser Ile Leu Leu Thr Leu Asp Gly Arg
      1               5                   10                      15

    gtg aag ctc tcg gac ttc gga ttc tgt gct cag atc agc aaa gac gtc     97
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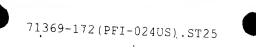
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      Val Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Ile Ser Lys Asp Val
               20                  25                  30

      cct aag agg aag tcc ctg gtg gga acc ccc tac tgg atg gcg ccc gag    145
      Pro Lys Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu
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      g                                                                  146
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1               5                  10                  15
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            20                  25                  30
Pro Lys Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu
            35                  40                  45


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gcccagggga gacacctgaa cccccccagat ggtgacacac ctctgtggtc ctctgtcagg    180
gacataacct cccagcacag atttgcaaac tccctgctgc aggcacaagc agggctatcg    240
ggccccaggt gtggctcccc tgccttggtt cagggagtgg agacacagtt gcccactgct    300
ccccacccca ctgccaggcc tcttctgccc ccatgggtcc tggggtgggg gagccttggg    360
agttgaagaa tgcctctgac ccagattctt caagcagcct ctgagctcag aggaagagtc    420
tgcctcacgg cagcctccct ggggtctagc tgtcaatcgc ccaggaagaa atacccagcg    480
cgggacccgg cggggaagct ggccttctct gtcttcccag gtgcagcaca gcgagtgtaa    540
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```
ggagctgtct tgggcctgcc cagcctggtg ccctgcgggg gactgctggc acaggactgt      600
gactgggctt cagctctgtc tgaaaatctt tgcttcagag cacctcccta gtttgatctg      660
ataccccgcc tgaccctgcc agagtccaga ggtcacggcg gccagcccct gcctccggga      720
aggttattcc aaatgctccc acagccctga cccttcctgt tgctttgtcc cttgcagccc      780
tccttgccct cggaccagcc ggtgggg acc ttc agc cct ctg acc act tcg gat      840
                                                                       894
                                  Thr Phe Ser Pro Leu Thr Thr Ser Asp
                                   1                   5
```

```
acc agc agc ccc cag aag tcc ctc cgc aca gcc ccg gcc aca ggc cag       942
Thr Ser Ser Pro Gln Lys Ser Leu Arg Thr Ala Pro Ala Thr Gly Gln
 10                  15                  20                  25
```

```
ctt cca ggc cgg tct tcc cca gcg gga tcc ccc cgc acc tgg cac gcc       990
Leu Pro Gly Arg Ser Ser Pro Ala Gly Ser Pro Arg Thr Trp His Ala
             30                  35                  40
```

```
cag atc agc acc agc aac ctg tac ctg ccc cag gac ccc acg gtt gcc      1038
Gln Ile Ser Thr Ser Asn Leu Tyr Leu Pro Gln Asp Pro Thr Val Ala
             45                  50                  55
```

```
aag ggt gcc ctg gct ggt gag gac aca ggt gtt gtg aca cat gag cag      1086
Lys Gly Ala Leu Ala Gly Glu Asp Thr Gly Val Val Thr His Glu Gln
         60                  65                  70
```

```
ttc aag gct gcg ctc agg atg gtg gtg gac cag ggt gac ccc cgg ctg      1134
Phe Lys Ala Ala Leu Arg Met Val Val Asp Gln Gly Asp Pro Arg Leu
     75                  80                  85
```

```
ctg ctg gac agc tac gtg aag att ggc gag ggc tcc acc ggc atc gtc      1182
Leu Leu Asp Ser Tyr Val Lys Ile Gly Glu Gly Ser Thr Gly Ile Val
 90                  95                  100                 105
```

```
tgc ttg gcc cgg gaa gaa cac tcg ggc cgc cag gtg gcc gtc aag atg      1230
Cys Leu Ala Arg Glu Glu His Ser Gly Arg Gln Val Ala Val Lys Met
             110                 115                 120
```

```
atg gac ctc aga aag cag cag cgc agg gag ctg ctc ttc aac gag           1275
Met Asp Leu Arg Lys Gln Gln Arg Arg Glu Leu Leu Phe Asn Glu
             125                 130                 135
```

```
gtgggaggac agggtgggac acacggggg gcgttgggga tgggcagtga gcagccagcc      1335
aggctggaca tctgtgagca ggggcagtgg gtggccatgc gtctgggcac tgtgcctggc      1395
actcaggccc ccacctgccc ccag gtg gtg atc atg cgg gac tac cag cac        1446
                           Val Val Ile Met Arg Asp Tyr Gln His
                            140                 145
```

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ttc aac gtg gtg gag atg tac aag agc tac ctg gtg ggc gag gag ctg      1494
Phe Asn Val Val Glu Met Tyr Lys Ser Tyr Leu Val Gly Glu Glu Leu
             150                 155                 160
```

```
tgg gtg ctc atg gag ttc ctg cag gga gga gcc ctc aca gac atc gtc      1542
Trp Val Leu Met Glu Phe Leu Gln Gly Gly Ala Leu Thr Asp Ile Val
         165                 170                 175
```

```
tcc caa gtc ag  gtgggcagct gggagggctg gaccctgagt gcaggctgcc           1593
Ser Gln Val Arg
         180
```

```
ctcaccatgg ccctgccagg gcaatgtggt cttctgcctg tggcccagaa gacttgggat
gcctgggctc ccctgcctgc tggggtaact gagacccagg ggtcttggga gtggagaaga   1653
gaaggatagc ttctagccaa agctcaggcc ccagttttca ccagggctat ggcctgactg   1713
tgctgccaaa cagattgcct gggagctgtg gggcctagca ccagggactc ctactctgct   1773
cagccacccc acgacctgcc agagctaacg ttctctttca tcgggtggcc ccaccttcct   1833
gtccag g ctg aat gag gag cag att gcc act gtg tgt gag gct gtg ctg     1893
        Leu Asn Glu Glu Gln Ile Ala Thr Val Cys Glu Ala Val Leu     1942
            185                 190                     195
```

```
cag gcc ctg gcc tac ctg cat gct cag ggt gtc atc cac cgg gac atc
Gln Ala Leu Ala Tyr Leu His Ala Gln Gly Val Ile His Arg Asp Ile     1990
        200             His         205         Ile         210
```

```
aag agt gac tcc atc ctg ctg acc ctc gat ggc agg gtaggtccca
Lys Ser Asp Ser Ile Leu Leu Thr Leu Asp Gly Arg                     2036
        215                 220
```

```
tcctgtccct ggcacagcca cgctcccact tcctcctgat ccaccactca ctccctttc
aaccgcag gtg aag ctc tcg gac ttc gga ttc tgt gct cag atc agc aaa    2096
         Val Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Ile Ser Lys    2146
             225                 230                 235
```

```
gac gtc cct aag agg aag tcc ctg gtg gga acc ccc tac tgg atg gct
Asp Val Pro Lys Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala     2194
        240                 245                 250
```

```
cct gaa gtg atc tcc agg tct ttg tat gcc act gag gtaaccgttc
Pro Glu Val Ile Ser Arg Ser Leu Tyr Ala Thr Glu                     2240
        255                 260                 265
```

```
cctccacccc ccagacctcc caaaagcaac ttggcaactg gcagctcttc tgctgtggcc
cctccagtga gctcaccaaa agcagccctg gttttcagag tcccacctag tcaacaccct   2300
tccccctttc gatgggctg ctcttaccca gtgactttgc tgccaggaac gagtcctgca    2360
agtgctttcc tcagctcaag ggcagaatgg ggtatggccg ggcctcctat gtatgatggc   2420
ctttctctga gtgactgaca gctgtgtccc tataggcagt ggtcactcat gcaggcagta   2480
actggccaca gggcaggtga ccaggggagg aaggagacag acccaccaag gagagctggg   2540
gccagctgtc cccctccac cactgctgcc accagaacgc agctaccaat gggccaggt     2600
ctggccatgg ggtcagggac attttcctcc tgcag gtg gat atc tgg tct ctg      2660
                                       Val Asp Ile Trp Ser Leu      2713
                                                           270
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ggg atc atg gtg att gag atg gta gat ggg gag cca ccg tac ttc agt
Gly Ile Met Val Ile Glu Met Val Asp Gly Glu Pro Pro Tyr Phe Ser     2761
        275                 280                 285
```

```
gac tcc cca gtg caa gcc atg aag agg ctc cgg gac agc ccc cca ccc
Asp Ser Pro Val Gln Ala Met Lys Arg Leu Arg Asp Ser Pro Pro Pro     2809
        290                 295                 300
```

```
aag ctg aaa aac tct cac aag gtc agttggcaca caagggtgcg acctcgcaga
Lys Leu Lys Asn Ser His Lys Val                                     2863
        305                 310
```

```
ccccattcct cctgaggcaa ggggaccaga acctgggctc ccagcatctc ccttccactg
aagccacagg gtctgggctc ctggaaaagg ctcctctttc cccacacaaa acccgcacct   2923
gggtgtggag ccgcatctac gcacaagttc gcatgtgcgc tccgacaagt cgcctcccac   2983
ggctgtggca ggagagttgc tgcttggcag aagggttgct gcttggcagg cactggtcgg   3043
aagcccagtg gggcccatga gcaggaaag ccaggacacc agcaactccc tgctgtccag    3103
                                                                    3163
```

```
ggagggatcc ggagaagctt cactgagcac aaacccttca acccgtgtcg ggagatccat   3223
accatgattc gatgtccctg tccatcacgg cgagtcggct catgctccat tcgttgcaca   3283
ccccgacaca gctaagccac agcgttcccc ttaaagccag tataagtgca tggaagtggt   3343
atacatgtaa ccctttttgc caaatcggcc ccaaccccgc tataagtgca tggaagtggt   3403
cctgctggca ggtcagcacg gggctgataa gtggcaccgc aggccttact gtggacgccc   3403
aaatgtctca gagggctgaa gcctctcctc taaaatagca catctggtgg ccaaaacaag   3463
ccccaacaca aagctggatg ggaggaccaa caggaaacat cttccaagac aactggtcct   3523
tggagcccgc accgctaacc ccaaaattag catataaagc atgc                     3583
                                                                     3627
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<210> 8
<211> 311
<212> PRT
<213> Homo sapiens

<400> 8

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Thr Phe Ser Pro Leu Thr Thr Ser Asp Thr Ser Ser Pro Gln Lys Ser
1               5                   10                  15
Leu Arg Thr Ala Pro Ala Thr Gly Gln Leu Pro Gly Arg Ser Ser Pro
            20                  25                  30
Ala Gly Ser Pro Arg Thr Trp His Ala Gln Ile Ser Thr Ser Asn Leu
        35                  40                  45
Tyr Leu Pro Gln Asp Pro Thr Val Ala Lys Gly Ala Leu Ala Gly Glu
    50                  55                  60
Asp Thr Gly Val Val Thr His Glu Gln Phe Lys Ala Ala Leu Arg Met
65                  70                  75                  80
Val Val Asp Gln Gly Asp Pro Arg Leu Leu Leu Asp Ser Tyr Val Lys
                85                  90                  95
Ile Gly Glu Gly Ser Thr Gly Ile Val Cys Leu Ala Arg Glu Glu His
            100                 105                 110
Ser Gly Arg Gln Val Ala Val Lys Met Met Asp Leu Arg Lys Gln Gln
        115                 120                 125
Arg Arg Glu Leu Leu Phe Asn Glu Val Val Ile Met Arg Asp Tyr Gln
    130                 135                 140
His Phe Asn Val Val Glu Met Tyr Lys Ser Tyr Leu Val Gly Glu Glu
145                 150                 155                 160
Leu Trp Val Leu Met Glu Phe Leu Gln Gly Gly Ala Leu Thr Asp Ile
                165                 170                 175
Val Ser Gln Val Arg Leu Asn Glu Glu Gln Ile Ala Thr Val Cys Glu
            180                 185                 190
Ala Val Leu Gln Ala Leu Ala Tyr Leu His Ala Gln Gly Val Ile His
        195                 200                 205
Arg Asp Ile Lys Ser Asp Ser Ile Leu Leu Thr Leu Asp Gly Arg Val
    210                 215                 220
Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Ile Ser Lys Asp Val Pro
225                 230                 235                 240
Lys Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu Val
                245                 250                 255
Ile Ser Arg Ser Leu Tyr Ala Thr Glu Val Asp Ile Trp Ser Leu Gly
            260                 265                 270
Ile Met Val Ile Glu Met Val Asp Gly Glu Pro Pro Tyr Phe Ser Asp
        275                 280                 285
Ser Pro Val Gln Ala Met Lys Arg Leu Arg Asp Ser Pro Pro Pro Lys
    290                 295                 300
Leu Lys Asn Ser His Lys Val
305                 310
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<213> Homo sapiens

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cctctcctca gcgcctaaga gagaggccca gtgcgggtga ggagtcgcga ggaagaggcg  180
gaaggcgccg gaaggacc atg ttc cgc aag aaa aag aag aaa cgc cct gag     231
                    Met Phe Arg Lys Lys Lys Lys Lys Arg Pro Glu
                    1               5                   10
```

```
atc tca gcg cca cag aac ttc cag cac cgt gtc cac acc tcc ttc gac   279
Ile Ser Ala Pro Gln Asn Phe Gln His Arg Val His Thr Ser Phe Asp
            15                  20                  25
```

```
ccc aaa gaa ggc aag ttt gtg ggc ctc ccc cca caa tgg cag aac atc   327
Pro Lys Glu Gly Lys Phe Val Gly Leu Pro Pro Gln Trp Gln Asn Ile
        30                  35                  40
```

```
ctg gac aca ctg cgg cgc ccc aag ccc gtg gtg gac cct tcg cga atc   375
Leu Asp Thr Leu Arg Arg Pro Lys Pro Val Val Asp Pro Ser Arg Ile
        45                  50                  55
```

```
aca cgg gtg cag ctc cag ccc atg aag aca gtg gtg cgg ggc agc gcg   423
Thr Arg Val Gln Leu Gln Pro Met Lys Thr Val Val Arg Gly Ser Ala
60                  65                  70                  75
```

```
atg cct gtg gat ggc tac atc tcg ggg ctg ctc aac gac atc cag aag   471
Met Pro Val Asp Gly Tyr Ile Ser Gly Leu Leu Asn Asp Ile Gln Lys
                80                  85                  90
```

```
ttg tca gtc atc agc tcc aac acc ctg cgt ggt cgc agc ccc acc agc   519
Leu Ser Val Ile Ser Ser Asn Thr Leu Arg Gly Arg Ser Pro Thr Ser
                95                  100                 105
```

```
cgg cgg cgg gca cag tcc ctg ggg ctg ctg ggg gat gag cac tgg gcc   567
Arg Arg Arg Ala Gln Ser Leu Gly Leu Leu Gly Asp Glu His Trp Ala
        110                 115                 120
```

```
acc gac cca gac atg tac ctc cag agc ccc cag tct gag cgc act gac   615
Thr Asp Pro Asp Met Tyr Leu Gln Ser Pro Gln Ser Glu Arg Thr Asp
    125                 130                 135
```

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ccc cac ggc ctc tac ctc agc tgc aac ggg ggc aca cca gca ggc cac   663
Pro His Gly Leu Tyr Leu Ser Cys Asn Gly Gly Thr Pro Ala Gly His
140                 145                 150                 155
```

```
aag cag atg ccg tgg ccc gag cca cag agc cca cgg gtc ctg ccc aat   711
Lys Gln Met Pro Trp Pro Glu Pro Gln Ser Pro Arg Val Leu Pro Asn
```

```
                160                        165                          170
ggg ctg gct gca aag gca cag tcc ctg ggc ccc gcc gag ttt cag ggt    759
Gly Leu Ala Ala Lys Ala Gln Ser Leu Gly Pro Ala Glu Phe Gln Gly
            175                     180                      185

gcc tcg cag cgc tgt ctg cag ctg ggt gcc tgc ctg cag agc tcc cca    807
Ala Ser Gln Arg Cys Leu Gln Leu Gly Ala Cys Leu Gln Ser Ser Pro
            190                     195                      200

cca gga gcc tcg ccc ccc acg ggc acc aat agg cat gga atg aag gct    855
Pro Gly Ala Ser Pro Pro Thr Gly Thr Asn Arg His Gly Met Lys Ala
            205                     210                      215

gcc aag cat ggc tct gag gag gcc cgg cca cag tcc tgc ctg gtg ggc    903
Ala Lys His Gly Ser Glu Glu Ala Arg Pro Gln Ser Cys Leu Val Gly
220                     225                      230                      235

tca gcc aca ggc agg cca ggt ggg gaa ggc agc cct agc cct aag acc    951
Ser Ala Thr Gly Arg Pro Gly Gly Glu Gly Ser Pro Ser Pro Lys Thr
                240                     245                      250

cgg gag agc agc ctg aag cgc agg cta ttc cga agc atg ttc ctg tcc    999
Arg Glu Ser Ser Leu Lys Arg Arg Leu Phe Arg Ser Met Phe Leu Ser
            255                     260                      265

act gct gcc aca gcc cct cca agc agc agc aag cca ggc cct cca cca   1047
Thr Ala Ala Thr Ala Pro Pro Ser Ser Ser Lys Pro Gly Pro Pro Pro
            270                     275                      280

cag agc aag ccc aac tcc tct ttc cga ccg ccg cag aaa gac aac ccc   1095
Gln Ser Lys Pro Asn Ser Ser Phe Arg Pro Pro Gln Lys Asp Asn Pro
            285                     290                      295

cca agc ctg gtg gcc aag gcc cag tcc ttg ccc tcg gac cag ccg gtg   1143
Pro Ser Leu Val Ala Lys Ala Gln Ser Leu Pro Ser Asp Gln Pro Val
300                     305                      310                      315

ggg acc ttc agc cct ctg acc act tcg gat acc agc agc ccc cag aag   1191
Gly Thr Phe Ser Pro Leu Thr Thr Ser Asp Thr Ser Ser Pro Gln Lys
                320                     325                      330

tcc ctc cgc aca gcc ccg gcc aca ggc cag ctt cca ggc cgg tct tcc   1239
Ser Leu Arg Thr Ala Pro Ala Thr Gly Gln Leu Pro Gly Arg Ser Ser
            335                     340                      345

cca gcg gga tcc ccc cgc acc tgg cac gcc cag atc agc acc agc aac   1287
Pro Ala Gly Ser Pro Arg Thr Trp His Ala Gln Ile Ser Thr Ser Asn
            350                     355                      360

ctg tac ctg ccc cag gac ccc acg gtt gcc aag ggt gcc ctg gct ggt   1335
Leu Tyr Leu Pro Gln Asp Pro Thr Val Ala Lys Gly Ala Leu Ala Gly
            365                     370                      375

gag gac aca ggt gtt gtg aca cat gag cag ttc aag gct gcg ctc agg   1383
Glu Asp Thr Gly Val Val Thr His Glu Gln Phe Lys Ala Ala Leu Arg
380                     385                      390                      395
```

```
atg gtg gtg gac cag ggt gac ccc cgg ctg ctg ctg gac agc tac gtg    1431
Met Val Val Asp Gln Gly Asp Pro Arg Leu Leu Leu Asp Ser Tyr Val
            400             405                 410

aag att ggc gag ggc tcc acc ggc atc gtc tgc ttg gcc cgg gag aag    1479
Lys Ile Gly Glu Gly Ser Thr Gly Ile Val Cys Leu Ala Arg Glu Lys
            415                 420             425

cac tcg ggc cgc cag gtg gcc gtc aag atg atg gac ctc agg aag cag    1527
His Ser Gly Arg Gln Val Ala Val Lys Met Met Asp Leu Arg Lys Gln
            430                 435                 440

cag cgc agg gag ctg ctc ttc aac gag gtg gtg atc atg cgg gac tac    1575
Gln Arg Arg Glu Leu Leu Phe Asn Glu Val Val Ile Met Arg Asp Tyr
            445                 450                 455

cag cac ttc aac gtg gtg gag atg tac aag agc tac ctg gtg gga gag    1623
Gln His Phe Asn Val Val Glu Met Tyr Lys Ser Tyr Leu Val Gly Glu
460                 465                 470                 475

gag ctg tgg gtg ctc atg gag ttc ctg cag gga gga gcc ctc aca gac    1671
Glu Leu Trp Val Leu Met Glu Phe Leu Gln Gly Gly Ala Leu Thr Asp
                480                 485                 490

atc gtc tcc caa gtc agg ctg aat gag gag cag att gcc act gtg tgt    1719
Ile Val Ser Gln Val Arg Leu Asn Glu Glu Gln Ile Ala Thr Val Cys
            495                 500                 505

gag gct gtg ctg cag gcc ctg gcc tac ctg cat gct cag ggt gtc atc    1767
Glu Ala Val Leu Gln Ala Leu Ala Tyr Leu His Ala Gln Gly Val Ile
            510                 515                 520

cac cgg gac atc aag agt gac tcc atc ctg ctg acc ctc gat ggc agg    1815
His Arg Asp Ile Lys Ser Asp Ser Ile Leu Leu Thr Leu Asp Gly Arg
            525                 530                 535

gtg aag ctc tcg gac ttc gga ttc tgt gct cag atc agc aaa gac gtc    1863
Val Lys Leu Ser Asp Phe Gly Phe Cys Ala Gln Ile Ser Lys Asp Val
540                 545                 550                 555

cct aag agg aag tcc ctg gtg gga acc ccc tac tgg atg gct cct gaa    1911
Pro Lys Arg Lys Ser Leu Val Gly Thr Pro Tyr Trp Met Ala Pro Glu
                560                 565                 570

gtg atc tcc agg tct ttg tat gcc act gag gtg gat atc tgg tct ctg    1959
Val Ile Ser Arg Ser Leu Tyr Ala Thr Glu Val Asp Ile Trp Ser Leu
                575                 580                 585

ggc atc atg gtg att gag atg gta gat ggg gag cca ccg tac ttc agt    2007
Gly Ile Met Val Ile Glu Met Val Asp Gly Glu Pro Pro Tyr Phe Ser
            590                 595                 600

gac tcc cca gtg caa gcc atg aag agg ctc cgg gac agc ccc cca ccc    2055
Asp Ser Pro Val Gln Ala Met Lys Arg Leu Arg Asp Ser Pro Pro Pro
            605                 610                 615

aag ctg aaa aac tct cac aag gtc tcc cca gtg ctg cga gac ttc ctg    2103
Lys Leu Lys Asn Ser His Lys Val Ser Pro Val Leu Arg Asp Phe Leu
```

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```
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  1               5                   10                  15

gtc aag cta gtg gat ttt ggg gtg agt gct cag gtg gac cgc acc gtg    97
Val Lys Leu Val Asp Phe Gly Val Ser Ala Gln Val Asp Arg Thr Val
            20                  25                  30
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g                                                                   146
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